

From Initiation to Development: Key Factors Shaping Digital Transformation in Local Government

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ABSTRACT

Keywords: Digital Transformation, Local Government, Key Factors, Case Study.

Digital transformation in the public sector is increasingly vital, especially in developing countries where governance challenges and citizen demands are evolving rapidly. Prior research highlights leadership, infrastructure, and organizational readiness as success factors but often conceptualizes transformation as a linear process, overlooking its distinct stages. Moreover, most studies are situated in developed-country or national-level contexts, offering limited insights for local governments operating under resource constraints. This study aims to identify factors that influence both the initiation and development stages of digital transformation in local government. A qualitative case study was conducted on two departments within the Surabaya City Government, Indonesia, employing document analysis, interviews, and thematic coding. The findings reveal two main categories of factors: triggers for initial adoption (e.g., leadership vision, external pressures, and regulatory mandates) and accelerators that sustain transformation (e.g., cross-departmental collaboration, adaptive infrastructure, and capacity building). This staged perspective underscores that success requires not only strong leadership at the outset but also continuous institutional learning and alignment with citizen needs to maintain momentum. The study contributes theoretically by refining digital transformation models to include stage-specific dynamics, and practically by providing policymakers and managers with actionable strategies tailored to each phase of the transformation journey.

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Introduction

The successful implementation of digital transformation in the private sector has significantly shaped public expectations regarding the performance and service delivery of the public sector. Citizens increasingly demand digitalized public services characterized by real-time, high-value administrative processes (Saputri, 2021; Susilawati et al., 2023; Syuhada et al., 2024). These expectations place pressure on governments to reform their operational models to enhance efficiency, effectiveness, transparency, and overall citizen satisfaction (Mergel et al., 2019).

Despite the growing strategic urgency for public sector organizations to implement digital transformation, the actual number of public institutions that have initiated such efforts remains limited (Kamal Y., 2022; Kanma-Okafor et al., 2019; Kusnadi, 2021; Mulyani & Ningsih, 2021; Sari & Adi, 2020; Sri & Suyana, 2019; Utama, 2021). This discrepancy highlights a significant gap between policy-level ambitions and operational-level execution. While digital transformation is increasingly recognized as a necessity (Mergel et al., 2019; OECD, 2020), many public agencies—particularly in developing countries—continue to face institutional, technical, and managerial barriers that hinder implementation (United Nations Department of Economic and Social Affairs, 2022; Verhoef et al., 2021).

Numerous studies have explored the critical enablers of digital transformation, such as leadership, organizational readiness, stakeholder engagement, technological infrastructure, and institutional capacity (Mergel et al., 2019; Twizeyimana & Andersson, 2019; Vial, 2019). However, most of these studies treat digital transformation as a uniform process, often overlooking the distinct factors that drive the initiation of transformation versus those that influence its development and growth.

Furthermore, much of the current research is either conceptual or based in developed-country contexts (e.g., OECD countries), where institutional maturity and digital infrastructure are more advanced (Gil-Garcia et al., 2018; Vial, 2019). As a result, there is limited empirical research examining how these transformation processes unfold in subnational or local governments within developing countries, which often face resource constraints, limited digital capacity, and bureaucratic complexity (United Nations Department of Economic and Social Affairs, 2022).

This study addresses these gaps by (1) disaggregating the factors into two key transformation stages: initiation and development; and (2) investigating these factors empirically in the context of local governments in a developing country—specifically, within departments of the Surabaya City Government, Indonesia. By doing so, this research contributes to a more nuanced understanding of the digital transformation process and offers actionable insights for other local governments in similar socio-political and institutional environments.

Research Method

This study employed a qualitative research approach to explore the factors influencing both the initiation and development of digital transformation in local governments. The case study method was adopted, focusing on the Surabaya City Government, with two departments selected as embedded units of analysis. These units represented different levels of digital transformation maturity, enabling both comparative and comprehensive analysis.

Data were collected through semi-structured interviews, document analysis, and direct observation. Key informants included department heads, IT coordinators, and staff directly involved in digital initiatives. The interviews followed a flexible protocol to allow the exploration of emerging themes. Relevant documents—such as strategic plans, regulations, internal reports, and digital transformation blueprints—were analyzed to contextualize and triangulate the interview data. Direct observations of digital systems in practice further enriched the findings.

The analysis was conducted in two stages: (1) within-case analysis of each department and (2) cross-case analysis. The latter compared the progression of digital

transformation stages and the influencing factors across the two departments, providing insights into both shared and distinctive drivers of transformation.

Results and Discussion

Surabaya City Government is one of the local governments in Indonesia recognized as a pioneer in the implementation of e-government. Its first major milestone in this regard was the development of e-budgeting and e-procurement systems in 2002. The e-procurement system was eventually adopted by the central government as a digital platform for the procurement of goods and services. While digital transformation goes beyond the mere use of information technology in business processes—as is the case with e-government—the implementation of e-government can serve as a strong foundation for a broader and more comprehensive digital transformation. For this reason, the Surabaya City Government provides an interesting case study for examining the factors that influence the implementation of digital transformation at the local government level.

Between 2002 and 2024—the observation period of this study—some departments within the Surabaya City Government demonstrated progressive digital transformation, while others showed only modest advancement. The primary indicator of progress was the speed of technology adoption and the extent to which service processes were integrated into public service delivery. To gain a comprehensive understanding of the drivers and barriers of digital transformation, two departments with contrasting levels of digital transformation progress were selected: the Procurement and Development Administration Division (Case Unit 1), which demonstrated advanced progress, and the Department of Transportation (Case Unit 2), which exhibited slower development.

Case Unit 1 initiated its digital transformation in 2002 with the development of an e-budgeting system for use across all municipal departments. This initiative originated from the Unit Head, who identified that prevailing budgeting issues could be addressed through digital technology. Given the limited in-house expertise in digital system development, the Unit Head collaborated with universities possessing strong ICT competence. The implementation was fully supported by the Mayor, who mandated that all departments adopt the e-budgeting system. Departments refusing to comply would not receive budget allocations, thereby creating an implicit punishment mechanism to ensure adoption. Internal teamwork also played a key role in accelerating implementation. Because the e-budgeting system was relatively new at the time, the unit conducted extensive socialization and training across departments to facilitate adoption.

Later in the same year, Case Unit 1 developed e-procurement, a digital system for the procurement of goods and services. This system was the first to involve external stakeholders, namely vendors. Similar to e-budgeting, this initiative was spearheaded by the Unit Head. The demonstrated efficiency gains from e-budgeting motivated the leader to pursue similar reforms in procurement processes to achieve broader benefits. Even though no specific regulations on such digital systems yet existed, the Mayor strongly supported the development. A major challenge was the diverse ICT capabilities among vendors, which necessitated ongoing education and assistance.

These two pioneering systems earned Surabaya national recognition and awards, further cementing its reputation as a leader in local government digital transformation. Both systems were also granted intellectual property rights, underscoring their innovative value. Encouraged by these successes, Case Unit 1 expanded its digital initiatives from 2005 onward, developing integrated cross-departmental systems to improve data

accuracy and service delivery. Strong collaboration with external ICT experts became another critical factor driving rapid progress.

Case Unit 2, by contrast, began its digital transformation later, in 2010, with the development of the Surabaya Intelligent Transportation System (SITS). SITS is a digital traffic monitoring system connected to CCTV cameras installed at various city intersections. The system helped overcome the limitations of staff patrols by enabling real-time monitoring across multiple roads. Its development was directly instructed by the Mayor, who had prior experience with Case Unit 1's digital initiatives and recognized the potential of ICT to improve operational processes. This demonstrates that even if unit-level leadership lacks strong digital leadership, transformation can still be initiated when higher-level leaders with digital vision intervene. As with Case Unit 1, the development of SITS required collaboration with external ICT experts due to limited internal capacity.

Subsequently, Case Unit 2 extended its transformation to public-facing services. In 2016, it launched e-KIR, a digital vehicle roadworthiness testing system accessible to the public. In 2018, it introduced e-Go Bis, a real-time monitoring system for the public transportation service Suroboyo Bus. These initiatives were part of the broader e-government movement at that time. However, challenges arose, particularly with application stability and internet connectivity, which affected the real-time tracking of buses.

Cross-Case Analysis

The analysis reveals that Case Unit 1 advanced more rapidly in digital transformation. Within five years (2001–2005), the unit progressed from internal process improvements to involving external stakeholders, and eventually to integrating data across systems. In contrast, Case Unit 2 began its transformation only in 2010, initially focusing on internal process improvements. It was not until six years later that the unit expanded its digital initiatives to external stakeholders. Thus, compared to Case Unit 1, Case Unit 2 demonstrated a slower pace of digital transformation. Figure 1 illustrates these differences in transformation stages across the two cases.

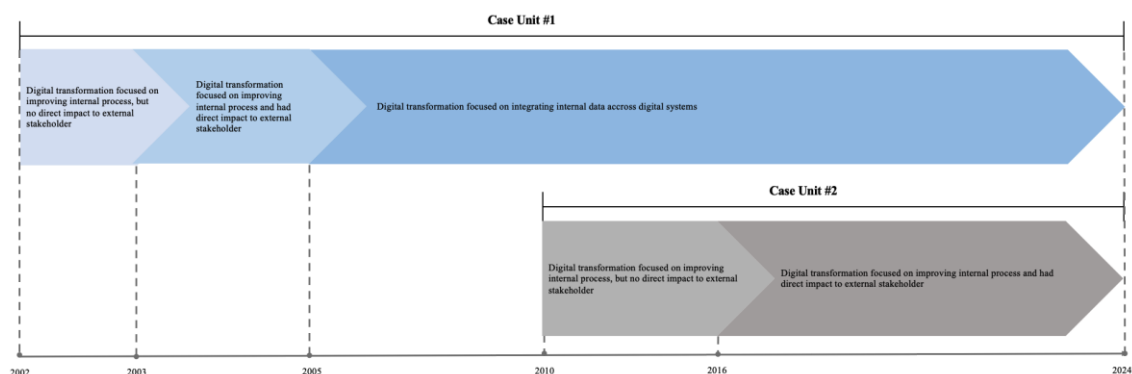


Figure 1. The Difference of Digital Transformation Stage in Case Unit 1

A key distinction between the two cases lies in the trigger factors for initiating transformation. In Case Unit 1, the presence of a unit leader with strong digital leadership capabilities was the primary driver. This leadership enabled rapid breakthroughs in digital adoption. In Case Unit 2, the trigger was external: direct instruction from the Mayor, who had prior exposure to digital transformation through Case Unit 1. This finding highlights

that strong unit-level digital leadership is crucial for initiating transformation. However, in its absence, higher-level leadership intervention can serve as a substitute driver.

Once digital transformation is initiated, additional factors become critical for accelerating progress. Cross-case analysis shows that internal factors such as strong mayoral support, effective teamwork, cross-departmental coordination, and the presence of reward-and-punishment mechanisms significantly shape progress. External recognition, in the form of awards, also provides motivation for further development.

The main obstacle consistently encountered was insufficient internal resources, particularly digital competencies needed for system development. This was mitigated through collaboration with external ICT experts. Another challenge was the heterogeneity of public ICT skills, which influenced system adoption. To overcome this, sustained socialization and training were conducted to ensure public users could benefit from the systems. These findings suggest that building a supportive ecosystem—including partnerships with ICT experts and continuous public education—is indispensable for successful digital transformation in local governments.

Overall, this study identifies two categories of factors: triggering factors that initiate digital transformation, and accelerating factors that drive further progress. Notably, internal factors emerged as more influential than external ones, differing from other studies that emphasize citizen demand as the primary trigger (Eggers & Bellman, 2015; Mergel et al., 2019). This divergence may reflect contextual differences: local governments in developing countries face distinct institutional and societal characteristics compared to their counterparts in developed nations. Figure 2 summarizes the key factors influencing digital transformation in the context of local governments in developing countries, as illustrated by this case study.

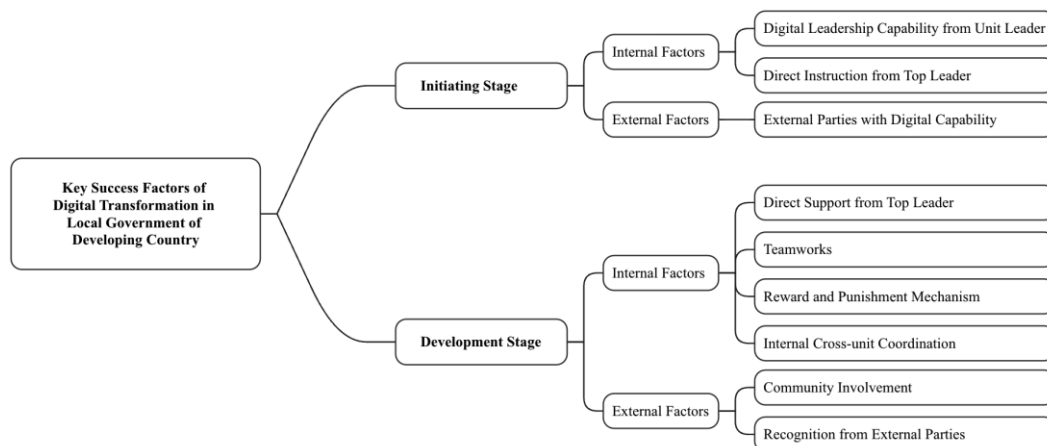


Figure 2. Key Factors Influencing Digital Transformation in Local Government of Developing Country

Conclusion

This study deepened the understanding of digital transformation in the public sector by analyzing its implementation in a developing country context and distinguishing between the initiation and development stages. Evidence from the Surabaya case showed that transformation was neither uniform nor linear, requiring different factors at each stage. Leadership at the unit level and mayoral directives acted as key triggers for

initiation, while mechanisms such as interdepartmental collaboration, reward systems, teamwork, and external ICT partnerships sustained and accelerated progress. By focusing on local government in Indonesia, the research provided empirical insights that contrast with studies centered on national governments in developed countries, highlighting how internal dynamics and leadership outweighed citizen demand in resource-constrained settings. Future research could build on these findings by comparing different local governments across regions or countries to identify context-specific and universal drivers of digital transformation.

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